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REPLY: Left Ventricular Size Is Critical for the Echocardiographic Assessment of Chronic Severe Mitral Regurgitation

We read with interest the letter by Drs. Rafique and Siegel, and thank them for their comments. In our subpopulation of surgical patients, they show if one uses the additional criterion of a left ventricular end-diastolic dimension (LVEDD) ≥55 mm, concordance between echocardiography and magnetic resonance imaging (MRI) improves from 32% to 58%. They conclude LVEDD should be a key parameter in the echocardiographic assessment of chronic mitral regurgitation (MR).

It is well accepted that chronic MR causes an increase in LV size. We previously used this important relationship to validate the accuracy of MRI for quantifying regurgitant volume (1). We showed a tight coupling between MR regurgitant volume and LV end-diastolic volume ($r^2 = 0.8$), but this study was limited to patients with isolated, primary MR.

Using LV size as an additional criterion may improve the accuracy of echocardiography in a population of patients, but it is no substitute for the accurate determination of MR severity in an individual patient. This is because many other common diseases and conditions affect LV size. Myocardial infarction, nonischemic cardiomyopathy, and athletic heart can substantially increase LV size without increasing MR. Similarly, diseases such as restrictive cardiomyopathy and aortic stenosis can substantially decrease LV size without decreasing MR. Table 4 shows the limitations of using LVEDD as a criterion for MR severity (2). For example, patient #29 had an LVEDD of 62 mm, yet had mild MR, and patient #38 had an LVEDD of 53 mm, yet had severe MR.

Using LV size as a surrogate to avoid overestimation of MR severity is similar to the strategy advocated by some, to delay surgery until patients are symptomatic. The thought being that the presence of symptoms avoids the possibility of inappropriate surgery in MR patients that are mistakenly graded as severe (3). However, as is the case with using any surrogate, a potential problem is the possibility of confounding illnesses, especially when they are common. Consider 2 relatively common conditions: mild MR and restrictive cardiomyopathy. A patient with symptomatic restrictive cardiomyopathy and mild MR that is mistakenly graded as severe by echocardiography is at high risk of undergoing inappropriate surgery.

In summary, we believe echocardiographers should use all information available to them, including LV size, to determine MR severity. However, given the potential inaccuracy of echocardiography, and the cost and complications of open heart surgery, we are steadfast in our conclusion that cardiac MRI should be a strong consideration when important clinical decisions are being made based on MR severity, even in the presence of symptoms.

Seth Uretsky, MD
***Steven D. Wolff, MD, PhD**
*Carnegie Hill Radiology
170 East 77th Street
New York, New York 10075
E-mail: sdwolff@mrict.com

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Please note: Dr. Wolff is the owner of NeoSoft, LLC, and NeoCoil, LLC, medical device companies that make software and hardware for use with magnetic resonance imaging. Dr. Uretsky has reported that he has no relationships relevant to the contents of this paper to disclose. Helmut Baumgartner, MD, served as Guest Editor for this paper.

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Aortic Stiffness

Complex Evaluation But Major Prognostic Significance Before TAVR

We read with great interest the paper by Yotti et al. (1) regarding vascular load and transcatheter aortic valve replacement (TAVR). This study underlines the interaction between valvular and vascular functions in patients with aortic stenosis (AS). The authors highlighted the increase of vascular load after TAVR, which limits the afterload relief acutely and may endanger the cardiovascular prognosis later on.

Although no outcome data were available in this study, we recently confirmed this prognostic impact by assessing the significance of ascending aortic calcifications (AAC)—a surrogate of stiffness measured